

August 13, 2012, Navy Response to Questions Regarding Directional Instability and Related Issues on the Navy's First Littoral Combat Ship the USS *Freedom*

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USS FREEDOM and USS INDEPENDENCE are first-of-class vessels and were research and development ships that spent most of their first two years here doing extensive testing, both on the sea frame and the mission packages. We learned an enormous amount from these vessels over their last four years of operation, as evidenced by the significant design and production improvements on the follow-on ships. These ships continue to meet the Navy's expectations, and we remain fully committed to LCS.

As has been stated repeatedly by Navy leadership, both ship designs meet performance requirements as approved by the Joint Requirements Oversight Council, and specified in the FY10 solicitation. That includes the directional stability and maneuverability performance of the LCS, which is to the satisfaction of the Navy. Based on the ship design, the directional instability observed in USS FREEDOM's calm water trials was normal and has no impact on the operator's ability to maintain ship's heading. At no point during or after these trials have there been any concerns that USS FREEDOM is unsafe to operate or has undue difficulty in maneuvering or maintaining heading.

Directional stability is one of several characteristics evaluated during calm water trials, along with fuel usage, acceleration/deceleration, and other maneuvering characteristics. A ship's directional stability is its ability to regain, without operator intervention, its original heading after experiencing an external disturbance such as a wave or gust of wind. Although seemingly counter-intuitive, all ships actually need some amount of directional instability inherent to the hull in order to maneuver tactically through the water.

The intent of the trials is to define the inherent directional instability and resulting maneuvering characteristics for the operators' awareness. These trials are conducted on all first-of-class vessels in order to gain real world data to refine existing models, develop operational settings appropriate to the real world behavior of the vessel, and inform possible future design changes as appropriate (e.g., to further improve performance).

Initial testing for LCS 1 was completed in 2010 to inform early deployment and RIMPAC operational planning. The remainder of the calm water trials were conducted in 2011 and early 2012.

In early 2010, USS FREEDOM's Commanding Officer reported concerns with the ability to maintain steady course at high speed. This was investigated and resolved shortly after it was reported. It was not related to directional instability, but rather was determined to be a nozzle angle indicator issue that fed an incorrect angle to the autopilot, and was then corrected. During the remainder of the calm water trials, the issue did not repeat and the operators did not report any further concerns.

The late 2010 and early 2011 email exchanges between the crew, the LCS program office, and NSWC Carderock were opinions expressed in internal, working level discussions about initial data from the 2010 portion of the calm water trials. Individuals in the LCS program office in late 2010 limited discussion of the initial results of the first portion of the calm water trials because some of these initial results appeared to be invalid. Further, allowing widespread discussion of preliminary trial results for USS FREEDOM before USS INDEPENDENCE (LCS 2) underwent her trials could potentially impact FY 10 source selection by creating unfair comparisons between the ships. The results of the trials were not a factor in the evaluation of the FY10 block buy proposals and had no bearing on the Navy's dual block buy award decision.

Ultimately, the competitive pressure of the dual block buy award strategy afforded the Navy an opportunity to award up to 20 ships between Fiscal Year (FY) 2010 - 2015 with fixed-price type contracts. The award resulted in a procurement savings of approximately \$2.9 billion. Aside from the cost savings, the dual block buy award strategy was judged to have several additional benefits. The strategy allowed the Navy to increase ship procurement rate to support urgent operational requirements, and promoted efficiency in the industrial base - from the vendors to systems providers to the shipyards - while sustaining competition. The fixed-price type contract limits the government's liability and incentivizes both the government and the shipbuilder to aggressively pursue further efficiencies, and control cost.